

## COORDINATE GEOMETRY CONCEPTS

### General Conventions Used in the GEOPAK Manual

Throughout the coordinate geometry portion of the manual, several conventions are used to assist the user to understand the inherent flexibility associated with the various command lines.

( )	Denotes an optional item which may be included in the Command line.
<u>abcdef</u>	the underbar represents the <u>required</u> input of a given command. In the cases where the underbar does not underline an entire keyword, the part not underlined is optional.
<i>na, nb, ni</i>	points to be stored that have not been used before (new)
<i>pa, pb, pc</i>	previously stored points
angle	a numerical angle can be given in any one of the following forms: degrees minutes seconds degrees minutes degrees
P/M angle	the backsight direction, plus or minus the given angle. P is clockwise and M is counter-clockwise.
P/M DEF angle	the forward direction, plus or minus the given angle. P for clockwise and M is for counter-clockwise
Offset value	OFF (P/M) distance. P means to the right in the forward direction as implied by the statement. M is to the left. If the optional (P/M) is not given, PLUS is assumed.
station	A plus sign may be used, embedded in the numerical value. If no plus sign is used, the system parameters will be utilized. No spaces are allowed before and after the plus (+) sign.
DB	DIRECTION BACK: applies to the back tangent on curves and spirals.
DA	DIRECTION AHEAD: applies to the ahead tangent on curves and spirals.
CC	CENTER OF CURVE
Distance	(DIS) value (P/M/MUL/DIV value2) (DIS (FROM) pa TO pb (P/M/MUL/DIV value2) (DIS) R curvename

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### Direction

#### Allowable formats:

- angle (P/M angle)
- N/S angle E?W (P/M-)
- (AZ) angle (P/M-)
- pa to pb (P/M angle)
- pa, pb [optional short for pa TO pb]

### examples:

120 34 57  
N 44 08 14.3 W P 90  
S 17 50 E M 2 13 25

### Command continuation

continuation line is not required in GEOPAK for lines up to 256 characters. If the statement is more than 80 characters, keep typing, the line will move to the left as you type to a maximum of 256 characters.

NOTE that the input file, however, is formatted to 80 characters. If the line is over 256 characters, the minus sign (-) placed at the end of the line will indicate to the software that the rest of the command will be found on the next line. It is not necessary to be in the 256<sup>th</sup> column, just at the end of the command.

NOTE any GEOPAK command can be split at any point in the line without splitting the actual words.

### Pa-pi

a hyphen between two stored points implies reading those points consecutively.

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### ALPHANUMERIC POINT NUMBERS

GEOPAK supports alphanumeric point numbers. Alphanumeric point numbers can be utilized in any command where a point number is required. This includes storing points in the locate or intersect commands, and in the profile commands if the point has been previously stored with an elevation.

Alphanumeric point numbers should have an alpha prefix, then a number suffix, rather than a numeric prefix, alpha suffix. For example, 123abc is not acceptable, while abc123 is supported. The number portion must be greater than zero, i.e., abdc0 or abc000 are not supported. Special characters, such as %, \*<, #, should also be avoided. Since the hyphen (-) symbol is utilized for point range in several commands, a point number should not use hyphens.

However, the following COGO keywords should not be used as point names if no numeric characters are utilized. For example the word SHIFT is in the list, it means that the words SHIFT, SHUF, SHI, SH, and S cannot be used as point names. However, the words S1, SH1, SHIF1, and SHIFT1 can be used as point names.

Be aware that there may be other COGO keywords to avoid!

ALL	ARC	AREA	ASEC
AZIMUTH	BEARING	CC	CC1
CC2	CELL	CHAIN	CHORD
CON	COPY	CS	CURVE
DEFLECTION	DEGREE	DELETE	DELTA
DA	DB	DI	D2
ELEVATION	EQUATE	EX	FIX
FROM	GAP	LC	LENGTH
LINE	LIST	LOCATE	LS
LT	NEAR	M	OFFSET
ON	PARCEL	PC	PI
PIS	PISCS	PIZ	POINT
PRINT	PROJECT	PROFILE	PT
RADIUS	REDEFINE	RT	SC
SCS	SEGMENT	SEST	SHIFT
SHOW	SPIRAL	ST	STATION
STORE	SYSTEM	TANGENT	THRU

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TL                                      TO                                      TRANSPORT   TS

**NOTE:** The software was developed utilizing the EFB point naming convention. I.e. alphabetic prefix + numeric suffix. In that case, only the keywords that should be used are CC1, CC2, D1, AND D2.

When utilizing alphanumeric point numbers within the store point key-in command, the keyword POINT must be included. For example, when storing point SH3, the command syntax is :

**S POI SH3 X 12345 Y 12345**

**NOTE** that when strictly point numbers are utilized, the keyword point is not required.

**S 3 X 12345 Y 12345**